WASHINGTON PHYSICIANS FOR SOCIAL RESPONSIBILITY

WSMA Washington State Medical Association
Physician Driven, Patient Focused

October 13, 2022

Washington State Building Codes Council
1500 Jefferson St, SE
Olympia, Washington 98501

RE: Washington State Residential Building Code Updates

Dear Chair Doan and Members of the State Building Code Council,

On behalf of healthcare professionals across Washington State, we urge you to adopt the proposed residential building code updates. In particular, we strongly support the requirements for heat pump systems in new homes and stricter ventilation requirements for homes with gas stoves. These advancements are critical to protect public health especially in Washington's most vulnerable communities.

Electric heat pumps are necessary to achieve Washington's climate commitments and to mitigate related health impacts.

Over 200 of the world's leading medical journals made history last fall in an unprecedented joint statement urging world leaders to cut heat-trapping emissions to avoid "catastrophic harm to health that will be impossible to reverse."[1] The adverse health impacts of climate change are being felt already in our state.[2] Extreme heat events, wildfires, algae blooms, sea level rise and vector borne diseases are predicted to increase in our state and worsen the health of Washingtonians if we fail to act expeditiously and decisively to reduce greenhouse gas emission.

In Washington, gas appliances are driving the building sector's position as the fastest growing source of carbon emissions in the state which currently produces about 26 percent of our total climate pollution.[3] According to the 2021 Washington State Energy Strategy, the lowest cost pathway for achieving our state's commitment to 95 percent carbon reductions economy-wide

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[1] Atwoli, Lukoye. Baqui, Abdullah H. Benfield, Thomas. Bosurgi, Raffaella. Godlee, Fiona. Hancocks, Stephan. Et al. "Call for emergency action to limit global temperature increases, restore biodiversity, and protect health." *The Lancet*. https://doi.org/10.1016/S0140-6736(21)01915-2. Published September 11, 2021

[2] Ken Lans, Howard Frumkin, and Mark Vossler, Climate and Health/Washington 2022: A Special Report on Impacts and Solutions, Washington Physicians for Social Responsibility, http://wpsr.org/WAclimatehealth2022

[3] Office of the Governor. "Clean Buildings Policy Brief." https://www.governor.wa.gov/sites/default/files/documents/clean-buildings-policy-brief-bill-signing.pdf?utm_medium=email&utm_source=govdelivery. Published May, 2019

by 2050 relies on electrifying our buildings.[4] Thanks to our abundance of clean, low-cost electricity, swapping out gas appliances with electric ones would reduce the average Washington households climate footprint by 50%.[5] As a much more energy efficient alternative to their fossil fuel counterparts, electric heat pumps are a necessary first step.

If we do not use this moment to make real progress towards energy efficient targets by 2031, climate-related health impacts will only continue to worsen. Our patients are heat-stressed, experiencing pulmonary disease from wildfire smoke and air pollution, and are often in physical danger from failing gas infrastructure or encroaching sea levels and climate-related drought/flood cycles. As health professionals working to prevent what we cannot cure, we concur with the global medical community in naming climate change as the greatest threat to public health in the 21st century. Further, we agree with the authors of this article in the New England Journal of Medicine:

"Natural gas has been portrayed as a bridge to the future. The data now show that it is only a tether to the past." - PJ Landrigan, H Frumkin, B. Lundberg, (2020) "The False Promise of Natural Gas" in the New England Journal of Medicine

Gas appliances pollute indoor air and lead to dire adverse health outcomes.

Homes and buildings are now the largest source of toxic air pollution in the U.S. - linked to a greater number of premature deaths in 2018 than either the power or transportation sectors[6]. Gas burned in indoor stoves and other appliances emits fine particulate matter ($PM_{2.5}$), nitrogen oxides, carbon monoxide, formaldehyde and other volatile organic compounds (VOCs) into the indoor environment that impede lung function, cause respiratory damage and asthma symptoms, and lead to cardiovascular illnesses.[7] In Washington, the building sector accounts for an estimated 579 of the 848 estimated annual total premature deaths from air pollution across all source sectors, or 68% of the total – nearly three times the share of estimated premature deaths (201) due to road transportation sector air pollution in Washington. This data includes emissions from gas and wood smoke (20% of the total).[8] Gas stoves produce concentrations of

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[4] Haley, Ben. Kwok, Gabe. Jones, Ryan. "Deep decarbonization pathways analysis for Washington State." https://www.governor.wa.gov/sites/default/files/Deep_Decarbonization_Pathways_Analysis_for_Washington_State.pdf. Published December 16, 2016

[5] Gordon, Rachel. Bottorff, Cara. "Ner analysis: heat pumps slow climate change in every corner of the country." https://www.sierraclub.org/articles/2020/04/new-analysis-heat-pumps-slow-climate-change-every-corner-country. April 23, 2020.

[6] Dedoussi, I.C., Eastham, S.D., Monier, E. *et al.* Premature mortality related to United States cross-state air pollution. *Nature* 578, 261–265 (2020). https://doi.org/10.1038/s41586-020-1983-8

[7] WHO, 2010: WHO Guidelines for Indoor Air Quality: Selected Pollutants. 484 pp., World Health Organization, Geneva. https://www.euro.who.int/__data/assets/pdf_file/0009/128169/e94535.pdf

[8] Dedoussi, Irene; Eastham, Sebastian D.; Monier, E. (Erwan); Barrett, S.R.H. (Steven) (2020): Data accompanying the manuscript "Premature mortality related to United States cross-state air pollution". 4TU.ResearchData. Dataset. https://doi.org/10.4121/uuid:edfc5304-39ed-4556-a95a-f8b3313f7cfc

pollutants, particularly NO2 that exceed EPA standards for outdoor air quality.[9] Additionally, children are particularly vulnerable to the impacts of indoor air pollution from gas. Children growing up in homes using gas for cooking experience a 42 percent higher risk of developing asthma symptoms and a 24 percent higher lifetime risk of an asthma diagnosis than children in homes with electric stoves.[10]

Space and water heaters powered with gas have also been linked to increased instances of carbon monoxide poisoning. Two separate case studies in South Australia and India traced fatal carbon monoxide exposures among two separate victims to emissions from their gas space and water heaters. Further analysis reveals that in both cases the gas heaters in the victims homes contributed to 96.6% of carbon monoxide emissions.[11][12] Especially in times of structural failure, gas appliances can be potentially fatal, particularly to the young, elderly, and immunocompromised.

Low-income and historically marginalized communities face an even greater risk. Inadequate ventilation and smaller living spaces contribute to higher concentrations of pollutants in lower income multifamily buildings.[13] African American and Hispanic children are likely the most disproportionately burdened by indoor air pollution from gas stoves.[14] Research from Lawrence Berkeley National Laboratory found that gas stoves required higher ventilation rates than electric stoves due to the greater amount of NOx emissions generated by gas stoves.[15] The proposed values for range hood ventilation requirements are aligned with values that LBNL recommends for both gas and electric stoves.[16]

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[9] Jennifer M Logue et al, "Pollutant Exposuresfrom Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California,"Environmental Health Perspectives Volume 122,2014, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3888569

[10] Weiwei Lin, Bert Brunekreef, Ulrike Gehring, Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children, *International Journal of Epidemiology*, Volume 42, Issue 6, December 2013, Pages 1724–1737, https://doi.org/10.1093/ije/dyt150

[11] Mohankumar, T. S., Kanchan, T., Pinakini, K. S., Menezes, R. G., Singh, M., Sirohi, P., & Anwar, N. (2012). Gas geyser--a cause of fatal domestic carbon monoxide poisoning. *Journal of forensic and legal medicine*, *19*(8), 490–493. https://doi-org.offcampus.lib.washington.edu/10.1016/j.jflm.2012.02.025

[12] Heath, K., & Byard, R. W. (2019). Lethal carbon monoxide toxicity in a concrete shower unit. *Forensic science, medicine, and pathology*, *15*(1), 133–135. https://doi-org.offcampus.lib.washington.edu/10.1007/s12024-018-9990-x

[13] Gary Adamkiewicz et al., "Moving EnvironmentalJustice Indoors: Understanding StructuralInfluences on Residential Exposure Patterns inLow-Income Communities," American Journal of Public Health. 2011, https://www.ncbi.nlm.nih.gov/pubmed/21836112#

[14] Nadia N Hansel et al., "A Longitudinal Study ofIndoor Nitrogen Dioxide Levels and RespiratorySymptoms in Inner-City Children with Asthma,"Environmental Health Perspectives Volume 116Number 10, October 2008, p. 1430, https://ehp.niehs.nih.gov/doi/10.1289/ehp.11349

[15] Brett Singer et al., Effective Kitchen Ventilation for Healthy Zero Net Energy Homes with Natural Gas, 2021, Lawrence Berkeley National Laboratory, prepared for the California Energy Commission, https://eta.lbl.gov/publications/effective-kitchen-ventilation-healthy

[16] https://title24stakeholders.com/wp-content/uploads/2020/10/MF-IAQ_Final-CASE-Report_Statewide-CASE-Team_Final.pdf

Please move to protect community health by requiring the use of heat pumps and higher rates of ventilation in new homes with gas stoves.

Fossil gas in residential buildings poses serious risks to our health and our communities and runs counter to our climate commitments as a state. Electrifying building appliances will help ensure a safe and prosperous future and we thank you for your leadership in this effort.

Sincerely,
Jennifer Hanscom, CEO, Washington State Medical Association
Max Savishinsky, Executive Director, Washington Physicians for Social Responsibility

And the following health professionals:
Mark R. Vossler, MD, President, Washington Physicians for Social Responsibility
Kelly O'Hanley, MD
Tracy Banaszynski, Kenmore Planning Commissioner
Cornelia Teed
Jack Rice, MD
James S Mulcare
Paula Townsell
Edward Mills
Anita Scheunemann
Su Cummings
Rev. Anne Hall
Natalie Franz
Nancy Penrose
Marie Schlagel
Ashlin Mountjoy, MD, MPH
Dwight Rousu
Virginia Davis
Marisa Hughes
Shannon D Markley
Ben Pryor, CEO, Antioch University Seattle
Dr. Joseph Berkson
Lorraine D. Johnson
Frances Blair
Nancy White
Ashley Lindell, MD
Nancy Ellingham
Robin Lindley
Tonya Stiffler
John Alder
Bradley Buck
Teresa Allen

Luke Magnotto, MD
Adele Reynolds
Markus Boos, MD PhD
Aviva Lemberger
Dr. Linda Carroll
James W Little, Professor Emeritus, U Washington
Claire Richards, PhD, RN Nurse Scientist
Anna Janecek, MD
Coleen Anderson
Chris Covert-Bowlds, MD
Alex Fay, BSN, RN
Michael Soman, MD
Robert Young
Kristen Knox, MD
Mark F. Roller M.D.
James W Little, Professor Emeritus, Rehabilitation Medicine, UW
Dr. Rosemary Sweeney
Claire Richards, PhD, RN Assistant Professor of Nursing
Jill Denny, Physician
Nancy S Johnson, Retired RN
Julie Conklin, PA-C
Stephen Bezruchka, Associate Professor Emeritus, School of Public Health, UW
Anita Penuelas, MD,MPH
Joseph K Berkson, MD
Ashley Lindell, MD
Annemarie Dooley, MD
Robert Brown
Elizabeth Heath
Erik R LaRue
Cornelia Teed
Lorraine D. Johnson
Natalie Franz
James S Mulcare
Tracey Harbert, MD
Katherine Kauffman
Jonathan Witte, MD
Noah Silver, MD
Sherri Dysart
Florence Harty
Virginia Davis
Paul Allen, Physician
Arun Ganti, Emergency Physician
Ashlin Mountjoy, MD, MPH

Coleen Anderson
Virgene Link-New, Dr.
Dennis Ledden
Dagmar Fabian
Paula Townsell
Alison Roxby MD
Guila Muir, Founder, Guila Muir and Associates
Richard K Lipsky, Dr. of Internal Medicine and Geriatrics
Judy Olsen, Registered Environmental Health Specialist and Certified Asthma Educator
Linda J. Clark, MD